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Oat Variety Trials, 2010 and 2011

Abstract

Oat is the major spring-sown, small grain crop in Iowa. Spring-sown small grains can be used for grain and straw production, as a companion crop to establish hay and pastures, or as a source of early-season forage as hay or haylage. Because small grains generally mature before the end of July, a forage legume, cover crop, or green manure crop can follow oats, or animal manure can be spread on the field in which oats were grown.

Keywords

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Disciplines

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Oat Variety Trials, 2010 and 2011

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Introduction

Oat is the major spring-sown, small grain crop in Iowa. Spring-sown small grains can be used for grain and straw production, as a companion crop to establish hay and pastures, or as a source of early-season forage as hay or haylage. Because small grains generally mature before the end of July, a forage legume, cover crop, or green manure crop can follow oats, or animal manure can be spread on the field in which oats were grown.

Oat production is best under cool conditions. Careful management and proper choice of variety can make oats a profitable crop due to their low input requirements and favorable effects on succeeding crops in a rotation. Planting oats before April 15 is recommended for optimal yields in Iowa. This helps avoid exposure to warmer weather during grain fill.

Test weight is the most commonly used indicator of grain quality. High test-weight varieties should be chosen by growers who intend to market oat grain.

Oats are regularly affected by crown rust and barley yellow dwarf virus diseases in Iowa. Some varieties have adequate disease resistance or tolerance, and disease resistance should be considered when choosing an oat variety. Because the pathogen populations change from year-to-year, varietal resistance often breaks down within a few years, and growers should consider switching to a newer variety when this occurs.

Materials and Methods

Eleven oat varieties were tested in 2011 at the ISU Northeast Research Farm, Nashua, Iowa. The trial was planted on March 31 with a drill at a rate of four bushels/acre with 7-in. row spacing. Each plot of a variety occupied 576 square ft. The trial was sufficiently weed-free to not require the use of herbicides or hand weeding. The trial was grown on land that was in soybeans the previous year. Fertilizer was broadcast before spring land preparation. Plots were replicated three times. The trial was harvested on August 1 with a combine with weigh bin and the concave at setting No. 1 and cylinder speed at 1,150 RPM. Straw yields were determined from 7.5 ft wide by 10 ft long areas from the center of each plot.

Results and Discussion

The results of the oat test for 2011 is presented in Table 1. Yields reported are on a 32 lb/bushel basis. Test weight is the most important indicator of grain milling quality. Minimum test weights are 36 lb/bushel for U.S. No. 1 oats, and 33 lb/bushel for U.S. No. 2 oats. Yield results from a single year are not reliable predictors of next year's yield. Environment and disease conditions fluctuate greatly from year to year, so it is important to consider yields averaged over a number of years.

A 2-year summary of yield and test weight is also included in Table 1. Nine of the eleven varieties tested in 2011 were tested in 2010.

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Table 1. Performance of oat varieties tested at the ISU Northeast Research and Demonstration Farm, Nashua. 2010-2011 Summary.³

| Variety | Yield ¹ | Grain moisture | Test weight | % Heading on June 15 | % Heading on July 21 | Plant height on Aug. 1 | % Lodging on Aug. 1 | Straw yield on Aug. 2 | 2-yr. avg. yield ¹ | 2-yr. avg. test weight |
|-----------------------|--------------------|----------------|-------------|----------------------|----------------------|------------------------|---------------------|-----------------------|-------------------------------|------------------------|
| | bu/ac | % | lb/bu | % | % | inches | % | tons/ac | bu/ac | lbs/bu |
| Jerry | 93 | 12.9 | 31.7 | 60 | 96 | 39 | 0 | 2.03 | 95 | 32.1 |
| Excel | 111 | 13.0 | 29.8 | 33 | 78 | 34 | 0 | 1.53 | 108 | 29.9 |
| Shelby 427 | 106 | 13.0 | 33.4 | 87 | 99 | 39 | 0 | 2.23 | 111 | 33.6 |
| Tack | 99 | 12.7 | 34.1 | 83 | 99 | 32 | 0 | 1.63 | 99 | 34.1 |
| Rockford | 96 | 13.0 | 32.5 | 2 | 40 | 41 | 0 | 2.35 | 111 | 33.7 |
| Saber | 113 | 12.9 | 30.6 | 85 | 98 | 35 | 0 | 1.56 | 115 | 32.0 |
| Souris | 103 | 12.7 | 33.1 | 15 | 63 | 37 | 0 | 2.11 | 117 | 32.8 |
| Spurs | 95 | 12.7 | 32.6 | 78 | 99 | 32 | 0 | 1.41 | 105 | 32.6 |
| Robust | 82 | 13.4 | 31.5 | 5 | 43 | 35 | 0 | 1.51 | 86 | 30.9 |
| Newberg | 104 | 12.7 | 31.3 | 12 | 93 | 42 | 0 | 2.37 | -- | -- |
| Horspower | 110 | 12.7 | 32.8 | 67 | 91 | 31 | 0 | 1.48 | -- | -- |
| Average | 101 | 12.9 | 32.1 | 48 | 82 | 36 | 0 | 1.84 | 105 | 32.4 |
| LSD ² 0.05 | 13 | 0.4 | 0.9 | 15 | 13 | 4 | -- | 0.5 | 12 | 0.7 |

¹Grain yields are based on 32 lb/bushel test weight.²LSD = least significant difference. Entries that differ by one LSD or more are considered to be in different classes with 95 percent certainty.³The complete report on the 2010 Oat Variety Trial is available at: <http://www.ag.iastate.edu/farms/10reports/Northeast/OatVarietyTrial.pdf> with the tables posted at: <http://www.ag.iastate.edu/farms/10reports/Northeast/OatVarietyTrialTable.pdf>**Table 2. State of origin, PVP and disease ratings of varieties.**

| Variety | State of origin | PVP ¹ | Disease Ratings ² | | | |
|------------|-----------------|------------------|------------------------------|------------|-----------|------|
| | | | BYDV ³ | Crown rust | Stem rust | Smut |
| Jerry | ND | PVP | MS | S | MS | MR |
| Excel | IN | PVP | MR | IR | S | R |
| Shelby 427 | SD | PVP | MR | R | MR | R |
| Tack | IL | PVP | MR | R | -- | -- |
| Rockford | ND | PVP | MR | MR | S | R |
| Saber | IL | PVP | R | IR | -- | S |
| Souris | ND | PVP | MR | R | MR | R |
| Spurs | IL | PVP | MS | MS | MS | S |
| Robust | IN | PVP | R | R | S | MR |
| Newberg | ND | PVP | MR | R | R | S |
| Horspower | SD | PVP | -- | -- | -- | -- |

¹PVP. The Plant Variety Protection Act provides a certificate to the developer of a variety which grants exclusive rights for reproducing and marketing the seed.²Disease ratings: S=susceptible, MS=moderately susceptible, IR=intermediate resistance (between MS and MR), MR=moderately resistant, R=resistant.³BYDV=Barley Yellow Dwarf Virus.